

remaining recordable time. However, the Applicants respectfully submit that Kikuchi et al.'s formula is markedly different from the above formula recited in claims 7 and 21.

In particular, Kikuchi et al. determines a remaining recordable time by using the following formula.

remaining recordable time = (capacity of recording medium – estimation error value – recorded data size)/(**average bit rate**)

(see Column 45, lines 18-31 and Column 61, lines 54-58)

Accordingly, Kikuchi et al. uses an average recording rate as a calculation parameter (see Column 45, lines 28-31), whereas claims 7 and 21 use a standard bit rate as a calculation parameter for determining the remaining recordable time of a recording medium.

A standard bit rate, as recited in claims 7 and 21, is markedly different from an average recording rate, as disclosed by Kikuchi et al., in both purpose and effect.

In particular, the average recording rate of Kikuchi et al. is affected by a bit rate used in recording, where the bit rate used in recording is a variable value. The average recording rate of Kikuchi et al. takes different values each time a new remaining recordable time is calculated according to the recording/deletion of a program (video stream). Specifically, the formula used in Kikuchi et al. attempts to obtain a more accurate estimation of a remaining recordable time by dividing the remaining capacity of the recording medium by the average of recording bit rates actually used so far. However, since the recording bit rate is variable, an increase/decrease in a remaining recordable time caused by the recording/deletion of a program will cause the calculated remaining recordable time to have a greater difference with the actual running time of a program.

On the other hand, the standard bit rate recited in claims 7 and 21 is not affected by a bit rate used in recording, and therefore, always takes the same value regardless of the recording/deletion of a program. To illustrate this point, a concrete example of the standard bit rate of the present invention is a “time conversion parameter” described in the specification. In particular, lines 15-16 on page 12 of the substitute specification (line 25 on page 16 to line 1 on page 17 of the original specification) describe that the time conversion parameter 31 is “stored in the storage unit 17 at the time of shipment [of the

remaining recordable time calculation apparatus],” and will not undergo change thereafter. In other words, the standard bit rate (time conversion parameter) of the present invention is a preset fixed value.

Owing to this feature of including a “standard bit rate” and not including a “recorded data size” that is susceptible to different values of the bit rate used in recording, the inventions of claims 7 and 21 have a remarkable advantage in that the increase/decrease in the remaining recordable time of a recording medium caused by the recording/deletion of a program will perfectly match the running time of the program. This advantage is not achieved or even contemplated by the technique of Kikuchi et al.

In fact, because Kikuchi et al. uses a variable bit rate, an increase/decrease in a remaining recordable time caused by the recording/deletion of a program will cause the calculated remaining recordable time to have a greater difference with the actual running time of a program.

For instance, suppose a case where a first program is already recorded on a medium, and a second program, which is the same in running time as the first program but has a recording bit rate that is half the recording bit rate of the first program, is newly recorded on the medium. Then, if the formula of Kikuchi et al. is used, the calculated remaining recordable time of the medium will not be shorter in the amount of the running time of the second program. Instead, the calculated remaining recordable time in which the recording of the second program is incorporated will be longer than the remaining recordable time before the recording of the second program, since a variable bit rate is used.

Conversely, suppose a case where both the first and second programs are recorded on a medium, and the second program is deleted from the medium. Then, if the formula of Kikuchi et al. is used, the remaining recordable time of the medium will not be long in the amount of the running time of the second program. Instead, the calculated remaining recordable time in which the deletion of the second program is recorded will be shorter than the remaining recordable time before the deletion of the second program, since a variable bit rate is used.

The Applicants respectfully submit that the Kikuchi et al. reference is quite clear in its use of a variable bit rate. The Applicants respectfully request the Examiner to

direct his attention to Column 45, lines 28-31 of Kikuchi et al., which was cited by the Examiner to support his interpretation that Kikuchi et al. discloses a standard bit rate. However, Column 45, lines 28-31 clearly shows that Kikuchi et al. uses an average recording rate, not a standard bit rate as recited in claims 7 and 21.

Accordingly, the Applicants respectfully submit that Kikuchi et al. clearly does not determine a remaining recordable time of a recording medium by using a standard bit rate, since Kikuchi et al. clearly discloses that an average bit rate is used as a calculation parameter.

For at least the foregoing reasons, the Applicants respectfully submit that Browne et al. and Kikuchi et al. each clearly fail to disclose or suggest determining a remaining recordable time of a recording medium by using a standard bit rate as a calculation parameter, as recited in claims 7 and 21.

Therefore, no obvious combination of Browne et al. and Kikuchi et al. would result in the inventions of claims 7 and 21 since Browne et al. and Kikuchi et al., either individually or in combination, fail to disclose or suggest each and every limitation of claims 7 and 21.

Furthermore, it is submitted that the clear distinctions discussed above are such that a person having ordinary skill in the art at the time the invention was made would not have been motivated to modify Browne et al. and Kikuchi et al. in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 7 and 21.

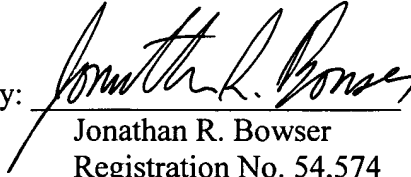
Therefore, it is submitted that the claims 7 and 21, as well as claims 8-13 and 22-27 which depend therefrom, are clearly allowable over the prior art as applied by the Examiner.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Eiichi HATAE et al.

By: 
Jonathan R. Bowser
Registration No. 54,574
Attorney for Applicants

JRB/nrj
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
April 20, 2006